

the skin of the chest. Not but that fairly well characterized keloid growths may be seen in many other parts, but nowhere else does it so fully develop its peculiarities. In many others it is distinctly different. On the face it is very rarely seen, on the back of the neck it may attain great thickness, but is seldom very hard; in the lobule of the ear it is not hard at all, but merely a firm, flabby solid. On the hands and feet it is perhaps never seen, and on the legs and arms it is rare, and never so hard as when on the chest or back. Lupus exemplifies, in a parallel manner, the influence of locality in conferring peculiarities. Note the ease with which a complete cure is effected on the arms and legs, as compared with the nose and face. On the hands and feet nothing that is usually recognized as lupus ever occurs, but in its place a sort of inflammatory papillary hypertrophy. The flat, non-ulcerated patch, with its thick layer of semitransparent apple-jelly-like tissue, so common on the cheeks, is never seen on the hands and feet. Yet that the ulcerations with papillary hypertrophy, to which I have just referred as occurring in the hands and feet, are really lupus, is proved by their frequent coincidence with lupus of unmistakable type on other parts.

In concluding this paper, I wish to make it clear that my object has not been to undervalue in any degree the labors of histologists, but rather to urge that clinical observers may find useful work in their own special field. I have tried to show that by careful case-collecting and the selection and grouping of cases, which, as regards locality, cause, and general course, are really alike, we may hope to construct, on a natural basis, clinical families much more minutely subdivided than is as yet possible to the microscopist.

CHRONIC HYPERPLASIA OF THE ORAL MUCOSA, WITH CORNIFICATION OF ITS EPITHELIUM.

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SYNONYMS: ichthyosis linguae (S. Plumbe, 1837; Hulke, 1861); plaques des fumeurs (Buzenet, 1858); tylosis (Ullmann, 1858); keratosis (Kaposi, 1866); psoriasis buccal (Bazin, 1868); papilloma or tylosis (F. Clarke, 1873); leukoplakia buccalis (Schwimmer, 1877); leucoma (Hutchinson, 1883; Butlin, 1885); opaline plaques of professional glassblowers (Guinard, A. Clarke); plaques nacrées commissuraires (Fournier); chronic epithelial stomatitis (E. Besnier).

This formidable array of names refers to a group of closely allied

affections that have only been recognized as distinct morbid conditions within the past twenty-five years, although evidently referred to in one form by Samuel Plumbe, in his treatise on *Diseases of the Skin*, published in 1837, in which he stated that he had observed an abnormal development of the papillæ of the tongue in a healthy man, which he regarded as precisely similar to ichthyosis of the skin. But Hulke, in 1861, appears first to have drawn attention to this special form by the report of a case upon which he operated and of which he made a minute study. This elicited a description of other cases and led to a careful study of this and allied affections, by a number of surgeons and dermatologists. The result of this combined research has not been to clear up wholly the mystery in which the disorders have been enveloped from the first, and considerable differences of opinion still exist among authorities regarding their true character.

I have ventured to include all the synonymes under a descriptive title which briefly sums up, according to Ziegler, the pathological anatomy of the affections, or at least of the leading varieties, those especially that tend to run into epithelioma. A name to apply generally is difficult to select, as there appear to be several forms of the disease differing in their clinical and histological appearances and responding differently to treatment, but all agreeing in being very chronic and no doubt bearing a close relationship to each other. It will be seen, further on, that there are grounds for recognizing at least three varieties of the disease and possibly a fourth, to each of which a separate name might with propriety be retained from the foregoing list.

The disease, in general, is characterized by the appearance of patches and streaks or raised areas, on the lingual or buccal epithelium, of a whitish, bluish, or yellowish color in different cases, and ranging in consistency from that of a piece of wet kid leather to that of cartilage. It begins very insidiously, and its early stages generally pass unnoticed by the absence of severe subjective symptoms. After the development of the first patches new ones frequently form, and it is the evolution of these which has been chiefly studied. The earliest morbid appearance, according to Schwimmer, is a red spot due to hyperæmia of the superficial bed of the mucous membrane; on the tongue this red spot is usually studded with granulations the size of a pin's head, due to the tumefaction of the fungiform papillæ. In this stage, which may last for several months, the implicated epithelium is not altered, but gradually its vitality is modified, it thickens, hardens, and changes in color, passing successively from bluish-white to grayish- and silvery-white in spots the size of a grain of wheat, which spread and become confluent, forming the spot or patch that generally comes under the notice of the surgeon. These changes take place very slowly. Schwimmer says that so long as the lesion is progressive it is surrounded by a narrow hyperæmic border,

which disappearing, the extension of the plaque is momentarily or definitely arrested.

If seen at its early stage, well-directed treatment generally removes the disease, but unfortunately attention is not usually called to it until it has lasted for some time and become more or less confirmed. In one form (ichthyosis), the patches are in the form of a thick, fibrous, pearly-white covering on the tongue, upon which may be seen lines and striae forming polygonal spaces. Ultimately these lines may become fissures, which suppurate and become very painful. Another form (psoriasis) is characterized by an occasional peeling off or desquamation of the involved epithelium, leaving bare, ulcer-like spaces which, later on, are again covered over by altered epithelium. All forms of the disease are very chronic: any one form may remain stationary, or slowly progress, and in a certain percentage of cases the tendency is to malignancy, epithelioma making its appearance at some point of the affected area, and running its fatal course with the same rapidity as when brought about by other causes.

This oral disease, in its pathological nature, is unquestionably related to psoriasis, ichthyosis, and verruca. The clinical features of one form are so similar to those of external ichthyosis as to justify the adoption of that name; of another, the minute anatomy resembles so strongly cutaneous psoriasis that Bazin applied that name to the lingual disease, it seems, with entire propriety. Ziegler¹ classes this group of affections among the hypertrophies. Debove² is inclined to regard the condition as one of cirrhosis. Fairlie Clarke regards its essential nature as a chronic inflammation. The initial state expresses no doubt a low grade of inflammation, while the more advanced condition is more probably a hypertrophy.

Let us consider briefly the histological characters of the affections, contrasting them with those of the kindred disorders of the skin. Debove, whose brochure is based on a study of twenty-four cases, made microscopic examination of the diseased parts of two canceroid cases, one of the tongue and one of the cheek. The tissues were taken some distance from the cancerous deposit, but are supposed to have shown changes due to this sequel or complication. He regarded the change as a cirrhosis of the lingual mucosa; it was found thickened, indurated, and gritty to the knife, with thickening of the epithelium; here and there the nucleolus of the vesicular cells was dilated, and the corium four or five times thicker than normal, owing to the presence of dense connective tissue. He found a flattening of the papillæ, which caused them to resemble those of the skin, a dilatation of the vessels and an accumulation of leucocytes around their calibre. Butlin (p. 148), in opposition

¹ Patholog. Anat., vol. II. p. 240.

² Le Psoriasis buccal. Paris, 1873, pp. 54.

to the views of the majority of other observers, believes the epithelium to be thinner than normal.

Schwimmer and Bazin examined specimens taken from the mouths of living patients before the onset of malignant symptoms. These authors found the fundamental lesion to be an infiltration of young cells in the superficial layers of the corium and the top of the papillomatous layer. The hyperplasia succeeding the hyperæmia was particularly marked around the vessels which appeared to be the starting-point of the alteration. The diapedesis of white blood-globules and the proliferation of connective tissue cells were equally active. The papillæ preserved their individuality, if the process was a mild one; if not, at a more advanced stage they became indistinct and were lost in the surrounding tissues—a change denoting the conversion of a benign to a malignant action.

In these descriptions it appears that the pathological anatomy of psoriasis is more nearly described than that of any other cutaneous disease, and the analogy is still further borne out by the termination of external psoriasis in epithelioma occasionally by precisely the same steps of transition as observed in lingual psoriasis. Dr. J. C. White, of Boston, stated before the American Dermatological Association, at a recent meeting, that he had witnessed three cases of cutaneous psoriasis terminate in epithelioma, one of which he had previously fully reported, with comments, in the *AMERICAN JOURNAL OF THE MEDICAL SCIENCES* for January, 1885. Dr. K. Schuchardtt, in his essay on the "Origin of Cancer,"¹ reports four cases of *psoriasis* of the tongue and mouth which terminated in carcinoma; three were inveterate smokers. In a syphilitic subject presenting a similar condition, cancer did not appear. In another case epithelial cancer developed from a psoriasis preputialis of six months' standing. Microscopically the mucous membrane affected by psoriasis showed inflammatory infiltration of the superior layers of the corium, and in the epithelium were numerous nuclei in a state of active proliferation. The application of Paquelin's cautery is especially recommended by Dr. Schuchardtt as a remedial measure. Case VI. of Weir's cases, given in his interesting paper entitled "Ichthyosis of the Tongue and Vulva," in the *New York Medical Journal* of March, 1875, was that of a man seen by Dr. Keyes at Hardy's clinic in Paris, who was affected with general simple non-syphilitic psoriasis; a whitened strip about one-half inch wide was seen crossing the dorsum of the tongue obliquely to its long axis. It was considered by Hardy as part of the general eruption, and disappeared with it. Case X. of the same series, a psoriatic patient, with the characteristic patches on the tongue and buccal surface, was cured by arsenic. Mr. J. Hutchinson has described several cases of lichen-psoriasis of the tongue, which seem to correspond

¹ Sammlung klin. Vortr., 257.

in appearance to the psoriasis of Bazin, at first punctate, and forming a patch by confluence. These are much benefited by arsenic. From these observations it certainly appears that a belief in the existence of oral psoriasis is perfectly legitimate.

W. Fairlie Clarke¹ found some increase in the thickness of the epithelial layer, some enlargement of the papillæ, and a great development of the rete mucosum. Around the bases of the papillæ and the submucous and muscular tissues there was very abundant nuclear cell growth. There was also a notable increase in the number and size of the bloodvessels of the parts. He illustrated his remarks by mounted microscopic specimens. Henry Morris² believes the disease to be like ichthyosis elsewhere; he has seen it on the tongue, while the neck was similarly affected.

Hulke³ found the disease he observed, and named ichthyosis of the tongue, to consist essentially in hypertrophy of the epithelial and papillary elements, resembling precisely in its minute anatomy the cutaneous disease of the same name. Plumbe also found the disease, as he observed it, an almost perfect counterpart of cutaneous ichthyosis, with its epithelial proliferation and overgrowth of papillæ; so prominent are these latter that they have been characterized as resembling those of the tongue of a cat. (Vidal.)

It therefore appears that this form may be regarded as a variety of localized ichthyosis, and its transition to malignancy may be due to its peculiar location. To my mind, the reasons for retaining the term are more weighty than those which have been advanced for its rejection.

A milder form of the disease is called by Butlin⁴ "smoker's patch," and its more advanced stage, leucoma. For this variety, however, I prefer Schwimmer's term, "leukoplakia buccalis," as it locates the lesion, describes its appearance, and does not name another disease; moreover, the disease does not necessarily depend upon smoking; it is rather the expression of an irritant acting upon a sensitive mucous membrane. I have observed in all cases of hyperæsthesia of the mouth and lips a thin, sensitive, external skin, with a tendency to congestion of the capillaries. All food of a hot or stimulating character, tobacco smoke, or alcohol, in such cases, excites a burning sensation of the tongue and roof of the mouth, which is apt to persist for some minutes. Acids appear to aggravate this tendency, and alkalis to relieve it. This, I take it, is the predisposing condition to this affection.

There is still another form of buccal plaque which authors have and still regard as belonging to the class of affections we are describing, namely, the buccal lesions of tertiary syphilis; but in my opinion they

¹ Med. Times and Gazette, March 21, 1874, pp. 331, 332.

² Quart. Journ. Mic. Sci., 1875, p. 97.

³ Diseases of the Tongue, 1885, p. 127.

⁴ Med. Times and Gazette, 1865.

should be classed altogether separately, as the disease in question is idiopathic, wholly independent of a constitutional virus, is different in its physical appearance and in its behavior, and is not in the least benefited by specific treatment. Notwithstanding these facts, authors persist in ascribing to syphilis the power of causing true leukoplakia buccalis, and Kaposi goes so far as to make the mistaken assertion that this disease, which he styled keratosis, always has a specific background following the opaline plaques of secondary syphilis. The error of this view has been abundantly demonstrated, and the tendency of opinion is more and more toward a disbelief in the action of a specific cause in any undoubted case. When occurring in connection with advanced syphilis it is an expression simply of debility, not of the constitutional taint.

It may not always be perfectly easy in all cases to differentiate between the oral manifestations of syphilis and idiopathic leukoplakia or ichthyosis, but a correct conclusion can be generally reached by observing that the specific lesion is the less obstinate and the more painful of the two; but the question can be definitely settled, as a rule, by the therapeutic test. Iodide of potassium and the mercurials aggravate the genuine, but cure the specific disease.

Two other kinds of patches in the mouth may be encountered, which, although not strictly belonging to this class, may be mentioned. The action of amalgam fillings in the teeth, when coming in contact with the mucous membrane, may cause a whitish aphthous-looking patch from epithelial thickening and erosion. This is not leukoplakia, but might become so in a person predisposed. Persons who are subject to squamous eczema occasionally suffer with peculiar scaly and excoriated patches on the tongue. This affection occurs almost exclusively in chlorotic women, and becomes aggravated at each menstrual epoch (Keyes).

Leukoplakia buccalis, and its allied disorders, are very rare. According to Schwimmer, their relative frequency is 1 in 250 affections of the skin. They are unknown in childhood and infancy, but occur most frequently between the ages of thirty and fifty. Henry Morris gives the extreme ages at which any form has been observed, as twenty-two and sixty-seven. Women are almost exempt. Debove did not encounter a single case among them in twenty-four cases; but a few cases are mentioned by other authors, three of which were complicated by the disease affecting the vulva. One of these cases was reported by Weir, one by Vidal, and one by Schwimmer.

The etiology of these oral affections differs in different persons; in some, as has been shown, the mucous disease is simply an extension of the cutaneous, and being part of the latter, yields to the treatment that benefits it. Again, I believe it is possible for a psoriatic or ichthyotic diathesis to declare itself in the mouth, and the other parts of the body to remain free. As a rule, no tendency to cutaneous eruptions is observable

in persons who become the victims of either of these affections, but a sensitive buccal and lingual covering is the predisposing condition, and the local action of irritation the exciting cause; that local irritation may be alcohol drinking, tobacco smoking, hot or peppery food, forcible and repeated compression of the cheeks against the teeth or other hard substance, or, in fact, irritation from any source whatever, if long enough continued.

Most writers believe that the abuse of tobacco is the common exciting cause, but when we reflect that nearly all men smoke, and very few suffer from any of these affections, and that quite a respectable number of cases are on record, occurring in men and women who had never used tobacco, and in whom the disease arose apparently from a constitutional predisposition only, the action of tobacco smoke as a cause becomes less prominent, although in some cases—possibly the majority of a certain form—it is undeniably the irritant which excites the diseased action. The obscurity as to cause and nature has arisen largely, no doubt, from confounding two or three allied but distinct affections. A buccal and cutaneous eruption occurring and disappearing simultaneously, I should be inclined to regard as identical, or a buccal lesion occurring independently and presenting the scaliness of psoriasis and yielding to arsenic, I should certainly regard as a psoriatic manifestation. There is, however, a form of the disease which does not present the gross characters of psoriasis, ichthyosis, or any external skin disease, occurring in persons with perfectly clear skins and no taint of syphilis, which does not yield to constitutional or local treatment. This may be caused by smoking to excess, and, as Butlin says, will recover if the inculpatated cause be discontinued early; if the local irritant be continued long enough, the disease becomes confirmed, the histological changes occur which are persistent and intractable, and may yield to no known treatment except, in favorable cases, to excision or the actual cautery. In this form, as perhaps in most forms, the mucous membrane of the tongue and mouth is more than usually delicate and sensitive; objectively there may be no special evidence of this, but subjectively there is, the person so provided by nature finding that smoking even the mildest kind of tobacco will cause a burning or biting sensation of the tongue, and hot food cannot be eaten with the same impunity as it can by other persons.

Lastly, a disordered condition of the digestive apparatus may furnish a helping hand in bringing about this intractable disorder; at all events, after the affection is established it is noticeably aggravated by digestive and biliary derangements.

In *treatment* much depends upon the stage and form of the disease, for, as intimated, the diathetic forms and the early stages of the idiopathic variety are the more likely cases to be cured by treatment. If we find that we have to deal with a gouty manifestation, colchicum and the

alkalies must obviously be our main dependence; if the disease appears in a person much debilitated from any cause, the cause must be sought and treated; if a cutaneous eruption coexists, our remedies should be addressed to it as the probable *fons et origo mali*. If no such indication can be found, we may feel pretty confident that constitutional measures will avail but little, if at all. Authorities do not all agree that the affection in its confirmed idiopathic form is incurable, but such is the general opinion, and the main reliance is upon topical measures. In the exact use and kind of local applications there is some diversity of opinion, but upon one point all agree, namely, in *avoiding escharotic and irritant applications*. All experience goes to show that caustics increase the tendency to a cancerous transformation.

Hillairet, of Paris, found some alleviation to result from the application of chromic acid (1:8) repeated for three days in succession and subsequently at greater intervals. He recommended also rinsing the mouth frequently with Vichy water.¹

Butlin² regards the confirmed disease in any of its forms, incurable. Palliation by local means is all he admits as possible; this he finds best accomplished by a wash containing to each ounce of distilled water either fifteen grains of bicarbonate of potassium, two grains of chromic acid, or one grain of bichloride of mercury, the latter preferably when the disease is modified by the syphilitic poison. Weak solutions of borax, alum, or common salt he finds of advantage in some cases. The mel boracis he thinks best for sore places. The use of the knife he limits to thick and circumscribed patches, warty growths, and ulcers that are obstinate or show any induration about their bases. These he regards as young cancers, and their removal at this early period as the only mode of saving the patient from subsequently acquiring fully developed and incurable carcinoma.

Schwimmer,³ as already stated, believes in the thorough curability of the disease during its erythematous stage, and is also hopeful by persistent treatment of dissipating well-marked whitish plaques of thickening. His treatment, as described by himself, does not offer anything specially new. Soothing alkaline washes, very weak chromic acid, and sublimate solutions gave the best results. Strong applications were in general unfavorable; the temporary palliation produced by a strong solution of nitrate of silver did not last, but ultimately tended to aggravate the disease. Soothing remedies gave permanent benefit and, he thinks, prevented, in some of his cases, a change to malignancy.

Weir, of New York, in a note to the writer, states that in the treatment of ichthyosis linguæ he has practised excision, scraping under the

¹ Trans. of the Seventh Int. Med. Cong., vol. III, p. 173, 1881.

² Op. cit., pp. 152 et seq.

³ Die idiopathischen Schleimhautplaque der Mundhölle (leukoplakia buccalis), Vierte Jahresschr. für Derm. und Syph., 1877, p. 511; 1878, p. 53.

influence of cocaine, and the destruction of the patch by a strong solution of chromic acid (60–100 gr. ad 5j). When it has lasted for some time, and there is any appreciable thickening, he considers excision or scraping with a sharp spoon as the best measure.

Ashhurst (personal communication) advocates the let-alone policy in all cases not admitting of excision.

Heath,¹ in his brief but suggestive account of these affections, describes a form of chronic glossitis which, he says, may be caused by stimulating food or drink, by over-use of tobacco, by syphilis, or by the prolonged ingestion of mercurials. Besides the tongue, it may also attack the cheeks. If unchecked, patches may form which peel off from time to time and constitute the so-called *psoriasis lingue*. If still unchecked, a more confirmed and serious disorder follows, characterized by the formation of permanent whitish patches. This is *leukoplakia* or *leucoma*. This may pass into cancer. Still more serious is the disease known as *ichthyosis of the tongue*—possibly a later link in the chain of evolution, but more probably occurring *de novo*. Of this form, it is believed that it will run with absolute certainty into epithelioma if left to its own evolution. He also refers to Hutchinson's description of patches on the tongue and cheeks in association with external psoriasis and pityriasis.

We have here a suggestion for an orderly nomenclature and a clearing up of the confusion that has hitherto existed, resulting from the attempt to explain a group of morbid conditions under a single name, and that name a different one with different authors.

My clinical experience with these disorders is limited to five cases, all of the idiopathic form—all males—two in the erythematous stage, and three in the stage of whitish plaques. The two former were benefited by local treatment and changed habits, and soon passed from under my care. Of the three latter, one was in the person of an enlisted man of the army, who came only once to my office. On the left side of his tongue was a scar which had existed for many years and around which a whitish alteration of the epithelium alternated with a reddish and painful condition of the mucous membrane (psoriasis). This he had observed for several years. At the time I examined it, it was the seat of some soreness. I directed him to paint it several times a day with the mel sod. borat. He denied ever having had syphilis, but used tobacco to excess, as the odor about his person testified. He had also been a hard drinker, but had reformed some months before. The second case is that of a gentleman who has been under my care for about one year. He is a moderate smoker and temperate in the use of liquors, and has never had syphilis. The right side of his tongue is affected, and he appears to be of a gouty diathesis. Alkalies and colchicum inter-

¹ Internat. Ency. Surg., vol. v. pp. 50 et seq.

nally and alkalies locally have eased him, but his case now remains about stationary, occasionally bothering him and again giving him no uneasiness. The third case I have had under constant observation for over two years. It is one of marked leukoplakia of both cheeks, the tongue being wholly uninvolved. Soon after the patient first discovered the patches, and before applying for treatment, he touched a part of the affected area with nitrate of silver. This place is the only one which now seems incapable of being resolved. The other portions have slowly improved under treatment, and I am hopeful will, in the course of time, return to the normal condition. This patient is wholly free from syphilis. He formerly smoked moderately, but wholly abandoned the habit two years ago. He also used liquors abstemiously, but now rarely, and medicinally if at all.

The cure of any well-marked case is, to say the least, of doubtful attainment, but I would submit the following line of treatment as that which my experience and research persuade me to be the most likely to secure that end:

1. Idiopathic and irritative patches, usually expressive of debility, require a restorative regimen and tonic treatment. The use of tobacco in all forms should be discontinued as much on account of its general as its local effect. Alcohol should be interdicted, or used with caution, as nothing can be much worse in its local action upon the disease even when very much diluted, and I believe its general action to be, in the main, unfavorable. Debove regards the morbid change he observed as identical with cirrhosis; how much alcohol may have been concerned in its production we can only surmise—that it perpetuates and aggravates it I am convinced. All stimulating articles of food, ginger, pepper, mustard, carbonic acid waters, hot liquids, hot solids, etc., must be avoided. Cold does much less harm than heat, and ice cream, etc., can, as a rule, be eaten without injury. The general health should be brought up to as high a standard as possible by good food, regularly eaten, suitable exercise, frequent bathing, and sufficient sleep. General medication should simply be directed toward improving the general health, and topical applications need only look to keeping the buccal secretions in good condition. This treatment also answers for the disease when engrafted upon the anæmic condition of late syphilis, or that arising from prolonged use of mercurials. It is, however, always independent of specific poison, and must be treated accordingly.

2. Well-marked patches of *leukoplakia* should be treated in the same way, but we may in addition use weak chromic acid solutions as directed by Butlin, advancing by slow degrees to the strength advocated by Hillairet and Weir if necessary. This should be done with caution, as strong applications are in general unfavorable. In addition, it will be perfectly legitimate, I believe, to resort to the constitutional use of

arsenic, at first in tonic doses and afterward carrying it to the point of toleration, if necessary, and not otherwise contraindicated. Its thorough dilution should be directed, as otherwise it may do harm locally by its acidity. Weak alkaline washes should be occasionally used, once or twice daily, and it is important that the soothing and restorative plan of treatment be followed for years, if necessary.

3. Ichthyosis of the tongue seems to occur in perfectly healthy and robust men, and in its treatment the question of vital repair may not be one of so much importance. If the patch is not too thick, it may be first brushed with chromic acid solution, 1:8, or if not likely to be benefited by that application it may be curetted. But, as laid down by Heath, its thorough removal is necessary and, when clearly diagnosed, there is no question as to the proper course to take; it should be entirely removed by surgical means—the galvanocautery, the sharp spoon, or the knife, for otherwise its transformation into cancer is only a question of time.

4. As the localization of eczema, psoriasis, lichen, pityriasis, etc., on the tongue or inside the cheeks appears to be possible, it is well to bear this in mind, and if a coincident cutaneous eruption is found it may aid us in reaching a diagnosis.

Finally, an important question is, What cases are likely to undergo the epitheliomatous transformation? All writers agree that *ichthyosis linguae*, whether limited or extensive, is a precancerous condition. Leukoplakia affecting the tongue is also a forerunner of cancer only a little less certain than ichthyosis; when seated on the mucous lining of the cheeks or lips, Debove is of the opinion that it is less apt to display malignancy, but Verneuil and Debove each cite one case of cancer following its localization on the cheek, and Basseureau one case in which the lip was the seat. *Psoriasis*, as defined by Heath, when properly treated may remain benign or undergo a cure, and hence is less apt to pass into cancer, but if neglected will probably do so.

The so-called "smoker's patch," or "smoker's glossitis," or the erythema of irritation, being the first discoverable morbid state, is usually curable by proper treatment, and hence does not express the menace that the other forms do.

Weir thinks that the malignant tendency in any form is directly as the epithelial thickening. But simple irritation of the mouth, as of the skin elsewhere, if long enough continued, may eventually terminate in epithelioma.